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Ch 5

2nd half Rev

p838

5.6 1-7, 13, 14, 27, 29

1.  $\sqrt{75} = 5\sqrt{3}$  2.  $7\sqrt[4]{12} = 14\sqrt{3}$

3.  $\sqrt[3]{81} = 3\sqrt[3]{3}$  4.  $\sqrt{5r^5} = r^2\sqrt{5r}$

5.  $\sqrt[4]{7^8 x^5 y^6} = 7^2 xy \sqrt[4]{xy^2}$

6.  $3\sqrt{5} + 6\sqrt{5} = 9\sqrt{5}$  7.  $\sqrt{18} - \sqrt{50} = 3\sqrt{2} - 5\sqrt{2} = -2\sqrt{2}$

13.  $-\sqrt{3}(2\sqrt{6} - \sqrt{63})$   
 $-\sqrt{3}(2\sqrt{6} - 3\sqrt{7})$

14.  $(5 + \sqrt{2})(3 + \sqrt{3})$   
 $15 + 5\sqrt{3} + 3\sqrt{2} + \sqrt{6}$

$-2\sqrt{18} + 3\sqrt{21}$   
 $-6\sqrt{2} + 3\sqrt{21}$

27.  $\frac{5}{3 - \sqrt{10}} \cdot \frac{3 + \sqrt{10}}{3 + \sqrt{10}} = \frac{5(3 + \sqrt{10})}{9 - 10} = -5(3 + \sqrt{10})$   
 $-15 - 5\sqrt{10}$

29.  $\frac{-2 + \sqrt{7}}{2 + \sqrt{7}} \cdot \frac{2 - \sqrt{7}}{2 - \sqrt{7}} = \frac{-4 + 2\sqrt{7} + 2\sqrt{7} - 7}{4 - 7} = \frac{-11 + 4\sqrt{7}}{-3}$

1.  $\sqrt[3]{10}$  2.  $\sqrt[3]{8}$  3.  $\sqrt[3]{a^2}$  5.  $35^{\frac{1}{2}}$

8.  $5^{\frac{2}{5}} a^{\frac{1}{5}} b^{\frac{2}{5}} c^{\frac{1}{5}}$

10.  $27^{\frac{4}{3}} = 3^4 = 81$  11.  $(-32)^{\frac{2}{5}} = (-2)^2 = 4$

12.  $-81^{\frac{3}{4}} = -3^3 = -27$  13.  $(-125)^{-\frac{2}{3}} = (-5)^{-2} = \frac{1}{25}$

14.  $16^{\frac{5}{2}} \cdot 16^{\frac{1}{2}} = 16^{\frac{6}{2}} = 16^3$  15.  $8^{-\frac{2}{3}} \cdot 64^{\frac{1}{6}}$

17.  $7^{\frac{3}{4}} \cdot 7^{\frac{1}{4}} = 7^1 = 7$   $2^{-2} \cdot 2 = 2^{-1} = \frac{1}{2}$

20.  $x^{\frac{2}{5}} \cdot x^{\frac{8}{5}} = x^{\frac{10}{5}} = x^2$  21.  $m^{\frac{2}{5}} \cdot m^{\frac{4}{5}} = m^{\frac{6}{5}} = m^{\frac{1}{5}} \sqrt[5]{m}$

24.  $\frac{7^{\frac{3}{4}}}{7^{\frac{5}{3}}} = 7^{\frac{9-20}{12}} = 7^{-\frac{11}{12}} = \frac{1}{\sqrt[12]{7^{11}}} = \frac{\sqrt[12]{7}}{7}$

25.  $\frac{1}{t^{\frac{9}{5}}} = \frac{1}{t^{\frac{3}{5}} \sqrt[5]{t^4}} = \frac{\sqrt[5]{t}}{t^2}$

26.  $a^{-\frac{8}{3}} = \frac{1}{a^{\frac{8}{3}}} = \frac{1}{a a^{\frac{5}{3}}} = \frac{1}{a \sqrt[3]{a^5}} = \frac{\sqrt[3]{a^4}}{a^2}$

27.  $\frac{r}{r^{\frac{7}{5}}} = \frac{1}{r^{\frac{2}{5}}} = \frac{1}{\sqrt[5]{r^2}} = \frac{\sqrt[5]{r^3}}{\sqrt[5]{r^5}} = \frac{\sqrt[5]{r^3}}{r}$

5.8 2, 3, 8, 10, 14

2.

$$\sqrt{z+3} = 7$$

$$z+3=49$$

$$z=46$$

3.

$$\sqrt[3]{a+5} = 1$$

$$a+5=1$$

$$a=-4$$

8.

$$\sqrt{x-8} = \sqrt{13+x}$$

$$x-8=13+x$$

$$-8 \neq 13 \quad \text{No sol'n}$$

10.

$$\sqrt{3x+9} > 2$$

$$3x+9 > 4$$

$$3x > -5$$

$$x > -\frac{5}{3}$$

$$3x+9 \geq 0$$

$$3x \geq -9$$

$$x \geq -3$$

14.

$$\sqrt{2w+3} + 5 \geq 7$$

$$\sqrt{2w+3} \geq -2$$

$$2w+3 \geq 4$$

$$w \geq \frac{1}{2}$$

Rest

$$2w+3 \geq 0$$

$$2w \geq -3$$

$$w \geq -\frac{3}{2}$$

check 0 x

check 1 ✓

$$w \geq \frac{1}{2}$$

check  
-2.9 x

check  
0 ✓

$$x \geq -\frac{5}{3}$$

5.9

1, 2, 5, 8-10, 12, 16, 17, 24

1.

$$\sqrt{-289} = +17i$$

2.

$$\sqrt{\frac{-25}{121}} = \frac{5i}{11}$$

5.

$$(7i)^2 = 49i^2$$

$$-49$$

8.

$$-i^{22} = -(i^2)^{11}$$

$$+1$$

$$9. i^{17} \cdot i^{12} \cdot i^{26} = i^{55} = i(i^{22})^{25} = i(-i)$$

$$10. (14-5i) + (-8+19i) = 6+14i$$

$$12. (2+2i) - (5+i) = -3+i$$

$$16. \frac{3}{6-2i} \cdot \frac{6+2i}{6+2i} = \frac{18+6i}{36-4i^2} = \frac{18+6i}{40} = \frac{9+3i}{20}$$

$$17. \frac{5i}{3+4i} \cdot \frac{3-4i}{3-4i} = \frac{15i-20i^2}{9-16i^2} = \frac{20+15i}{25} = \frac{4+3i}{5}$$

$$24. \frac{1}{2}x^2 + 1 = 0$$

$$\frac{1}{2}x^2 = -1$$

$$\sqrt{x^2} = \sqrt{2}$$

$$x = \pm i\sqrt{2}$$